

Monastrol® and "Lumaco"
Copper Phthalocyanine Blue Pigments (PB-15)

Phthalocyanine blues can exist in two major crystal forms, the alpha phase and the beta phase (the more stable of the two). We market both types:

- BLUE R - Stable and unstable red shade (alpha phase).
- BLUE B - Stable intermediate shade (alpha phase).
- BLUE G - Stable green shade (beta phase).

The unstable alpha phase is subject to crystal growth ~~in solvents~~ (particularly ~~in~~ aromatic solvents) ~~and phase conversion~~. Stabilization of the alpha phase can be accomplished in two ways--surface treatment (Blue R) and partial chlorination (Blue B). Both stabilization methods shift the hue to the green side, with Blue B significantly greener than Blue R.

Phthalocyanine blues are ~~usually~~ ideal pigments, being distinguished by excellent lightfastness, bleed and chemical resistance, extreme stability to heat and exceptionally high tinting strength. Their excellent properties have led to ~~their~~ use in a wide variety of applications, including surface coatings, textile fibers, plastics, rubber, cement, linoleum and tile, ~~etc. etc.~~

~~under a few~~ Specific ^{product} finishing treatments are required ~~for Blue R, Blue B and Blue G base materials~~ to insure optimum performance in widely differing end use, thus leading to a proliferation of pigments codes.

To accommodate specific ~~end use~~ applications, phthalocyanine blues are also manufactured in several different physical forms, again adding to the list of codes:

- TONERS - Full strength (unextended or undiluted) pigments having maximum tinting strength, ~~for its type.~~
- RESINATED TONERS (marketed as "Ramapo" grades) - Pigments to which metallic resins or acrylic polymers have been added to improve ~~certain properties, chiefly~~ dispersibility and texture.
- LAKES - Pigments extended with aluminum benzoate to improve dispersion and flocculation resistance.
- PRESSCAKES - The "cakes" of water wet pigments as they come from the filter press, for easier dispersion in aqueous systems. We market two presscake types:
 - Conventional products with low solids content (pastes, ~25-45% solids).
 - Dewatered, high solids content (pourable chips, ~46-50% solids).
- AQUEOUS DISPERSIONS - ~~Smooth~~ Fluid dispersions of pigments in water, prepared from presscakes by the addition of suitable surfactants and mold inhibitors.

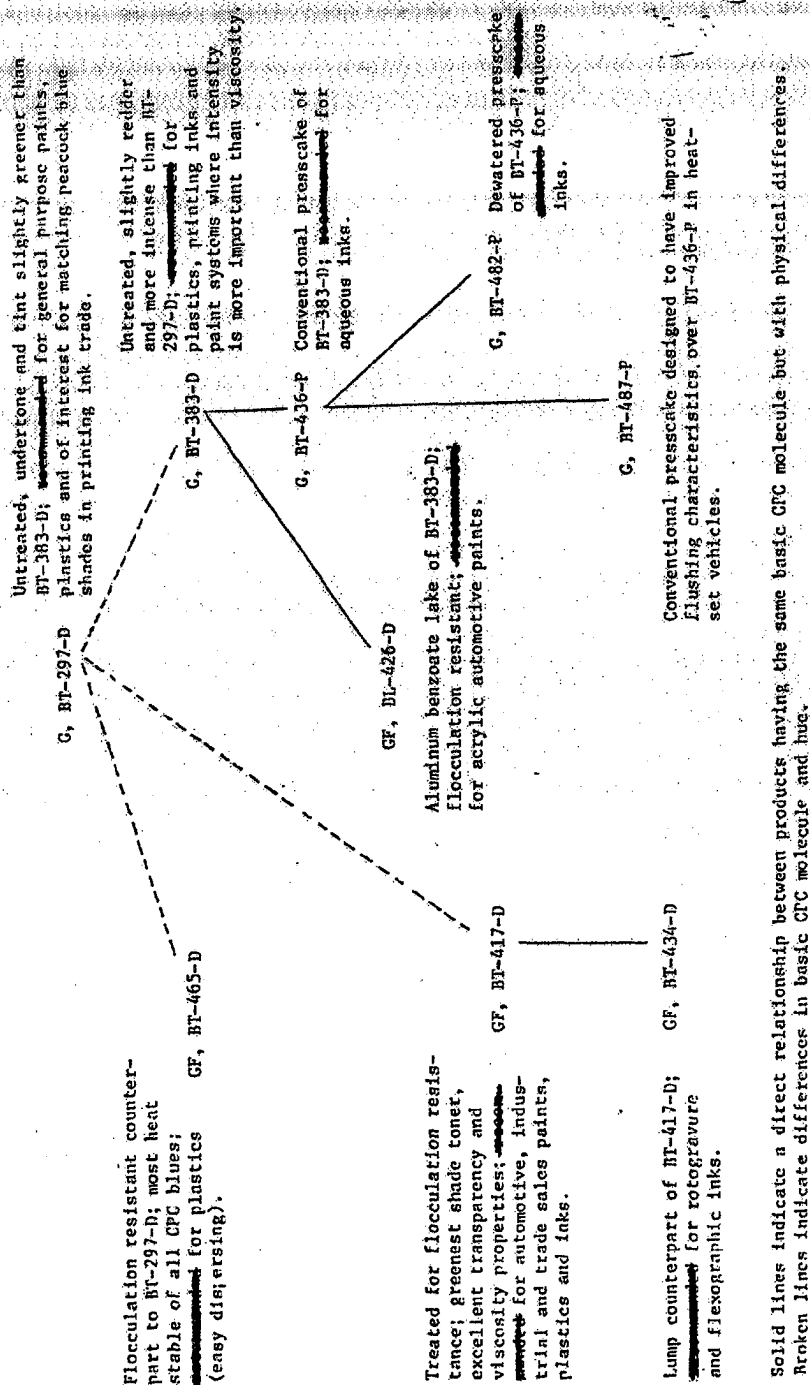
enclosed
The ~~attached~~ "Product Trees" list our complete CPC blue line and indicate specific relationships between codes. Recommended end use areas are generalized and should not limit product consideration. ~~in other areas. Detailed information on specific end use recommendations can be obtained by contacting:~~

F. A. WRIEDE - Coatings - (302) 999-2400

F. R. HILFKE - Plastics & Inks - (302) 999-2014

~~The following reference literature may also be useful in CPC blue pre-~~
~~motions:~~

CFC BLUE PRODUCT TREE: MONASTRAL® BLUE G

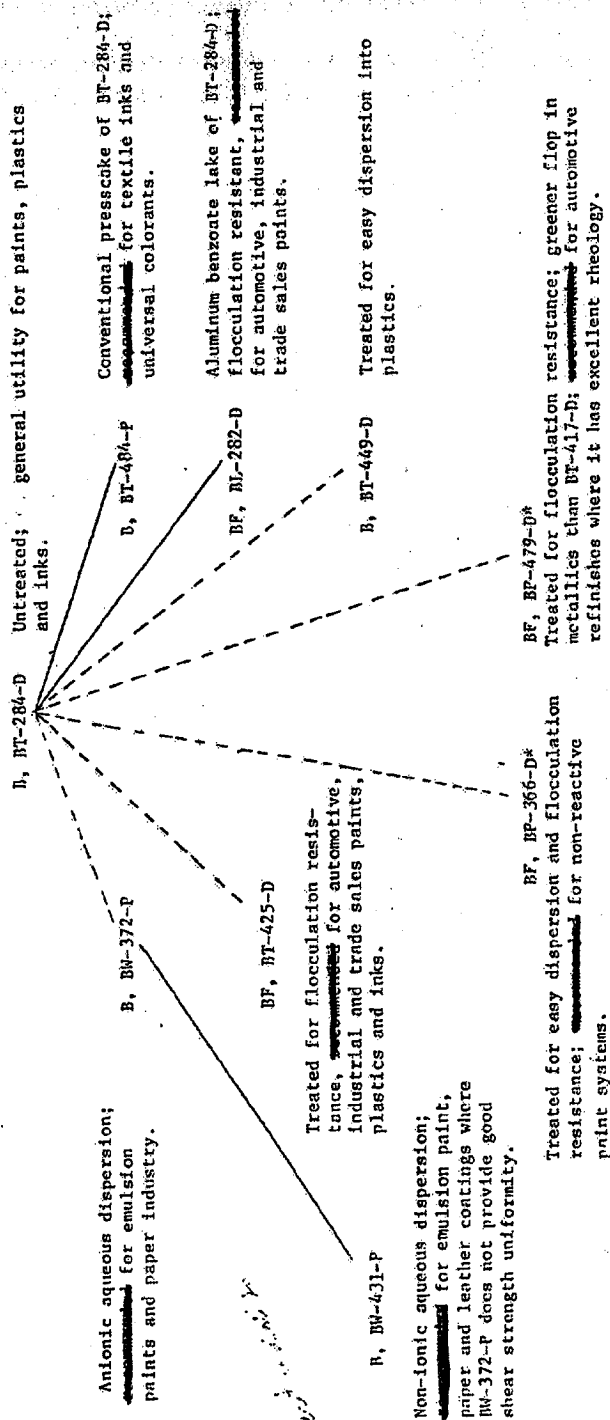


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~~Monastral~~
~~Blue G~~

CPC BLUE PRODUCT TREE: MONASTRAL® BLUE B

"And Ramapo"



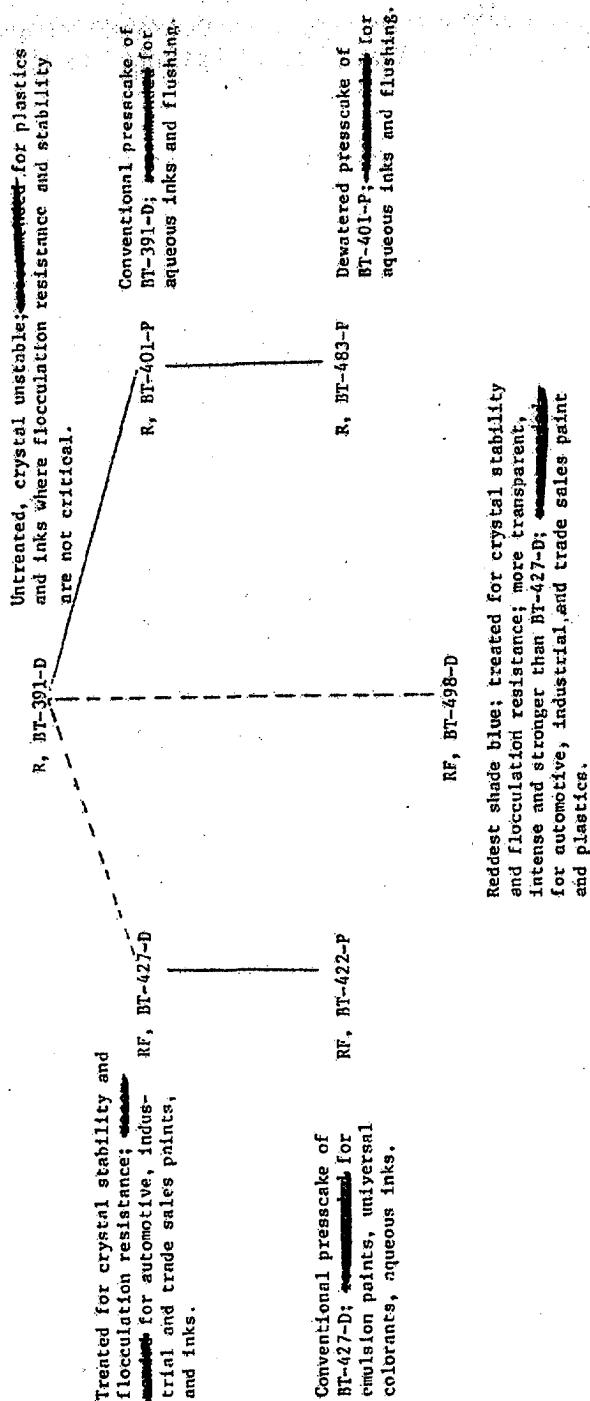
Solid lines indicate a direct relationship between products having the same basic CPC molecule but with physical differences.

Broken lines indicate differences in basic CPC molecule and hue.

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*Ramapo grades.

CPC BLUE PRODUCT TREE: MONASTRAL® BLUE R



Solid lines indicate a direct relationship between products having the same basic CPC molecule but with physical differences.

Broken lines indicate difference in basic CPC molecule and hue.

® Registered Du Pont trademark.

~~needed~~

CPC Blue Countersoffering

Debit	SUN	AN CHECK#	BASF	Ciba Ref	Haenon	Haenon	Hilts DAYS
PENSHIRE							
BL-426-D							
BT-297-D	249-3295	15-1020	BT-4699	X-2925			
BT-383-D	249-3450	15-1045	BT-46106				
BT-417-D		15-1029	BT-4651				
BT-436-P							
BT-465-D							
BT-482-P							
BT-487-P							
Blue Shade							
BL-282-D							
BT-284-D							
BT-425-D		15-1072	L-6920	X-2571	B-4773		
BT-449-D		15-1005	BT-4561	X-3347	B-4714	4863	
BT-484-P							
BW-371-P							
BW-431-P							6-11-8-327
ED SHADE							
BT-391-D	248-3758	15-1007	L-6932	X-3572			
BT-401-P							
BT-427-D							
BT-442-P	248-3750		L-6955	X-2303			
BT-483-P							
BT-498-D		15-0005	L-6980-F	X-2810			
Annat Do Blue Shade							
BP-366-D							
BP-479-D			BT-45107	X-3485	B-4804		